MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Office of Air Data Analysis and Planning

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To: Terry Darton - Air Permit Manager, Northern Regional Office (NRO)

From: Mike Kiss, Coordinator - Air Quality Assessments Group (AQAG)

Date: December 21, 2007

Subject: Virginia Department of Environmental Quality (DEQ) Technical Review of the Air Quality Analyses in Support of the Merged Stack (2-Stack) Comprehensive State Operating Permit for the Mirant – Potomac River Generating Station (PRGS)

Copies: Tamera Thompson – Director, Office of Air Permit Programs

1. Project Background

Mirant Potomac River, LLC (Mirant) submitted a modeling analysis (conducted by its consultant ENSR) of the PRGS on September 25, 2007 pursuant to a request from the Department of Environmental Quality (DEQ). The modeling assessment was performed to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS) for criteria pollutants (sulfur dioxide (SO_2), nitrogen dioxide (NO_2), particulate matter with a diameter of 10 microns or less (PM_{10}) and carbon monoxide (CO)), and to evaluate impacts from toxic pollutants (hydrogen chloride (HCl), hydrogen fluoride (HF) and mercury (Hg)). Amendments to the modeling analysis were received by DEQ on September 26 and 28, 2007, October 2 and 3, 2007, and November 29, 2007. The results of these analyses were used to support permit development.

This memo documents the procedures and results of the modeling analysis conducted for the proposed merged stack plant configuration. All results presented were reviewed and approved by DEQ.

2. Dispersion Credit

EPA's Stack Height Regulations (Section 123 of the Clean Air Act, 42 U.S.C. §7423) allow dispersion credit when modeling pollutants that are controlled in connection with a merging of flue gas streams. Mirant has tested several stacks at PRGS with and without use of dry sorbent injection (i.e., Trona) and has documented the reduction in emissions of SO_2, PM_{10}, HCl and HF. A May 3, 2007 letter from Judith Katz of EPA Region III to James Sydnor, Director, DEQ Air Division, indicates that EPA would likely approve a SIP revision for PRGS for the pollutants controlled by dry sorbent injection, with specific references to SO_2 and PM_{10}.

DEQ recommends to the State Air Pollution Control Board (SAPCB) that dispersion credit be granted for SO_2, HCl and HF for this permit action. DEQ also recommends to the SAPCB that a decision on whether to grant dispersion credit for PM_{10} be deferred until additional stack testing can be performed to support the claim that dry sorbent injection controls PM_{10}. Additionally, DEQ recommends to the SAPCB that for any future modeling analysis of particulate matter with a diameter of 2.5 microns or less ($PM_{2.5}$), dispersion credit should be deferred until additional stack test data can verify that dry sorbent injection controls $PM_{2.5}$. The deferrals are due to the fact that there is limited stack test data available to DEQ to support granting credit at this time.

For the pollutants not controlled with dry sorbent injection (i.e., NO_2, CO and Hg), no dispersion credit was given.

3. Stack Parameters

Continuous emissions monitor (CEM) data and Relative Accuracy Test Audit (RATA) data were reviewed for 2004-2006, and the most representative data were selected for stack parameters to use in the modeling. Specifically, the annual CEM data was reviewed to find the year in which the worst-case flow occurred and was consistent (either all high or low) for the three load ranges tested. Once the year was determined, RATA results were reviewed to find the years in which the flows were consistent in their relative accuracies. By this, DEQ reviewed the monitor accuracy relative to the EPA reference method and determined which years the monitors were consistently in the same direction (i.e., the bias adjustment factor affected each load range in the same direction, all flow data was either corrected up or down) and in those years in which all three load ranges were tested. Once all this information was matched it was determined that for Units C1 and C2 the most representative year of data was 2004 and for Units C3, C4, and C5, the most representative year was 2005. This grouping had nothing to do with cycling versus base load units and was strictly a coincidence.

3.1. Stack Parameters – SO_2, HCl and HF

Emissions from Units C1 and C2 were assumed to vent to Merged Stack 1 (MS1). Stack flow rates from Existing Stack 1 (ES1) and Existing Stack 2 (ES2) were combined and assumed to vent from MS1. The average temperature of ES1 and ES2 was assumed for MS1.

Emissions from Units C3, C4 and C5 were assumed to vent to Merged Stack 4 (MS4). Stack flow rates from Existing Stack 3 (ES3), Existing Stack 4 (ES4) and Existing Stack 5 (ES5) were combined and assumed to vent from MS4, with the diameter increased to 10 feet. The average temperature of ES3, ES4 and ES5 was assumed for MS4.

It is also important to note that the exhaust flow from Units C1 and/or C2 were modeled to allow the exhaust to be redirected from MS1 to MS4 to maintain common stack dispersion benefits under a wider range of operating scenarios. The exhaust flow from boilers C3, C4, and C5 shall be configured to prohibit their exhaust flow to MS1.

3.2. Stack Parameters – PM_{10}, NO_2, CO and Hg

For PM_{10}, NO_2, CO, and Hg, all emission units were modeled assuming existing stack parameters (i.e., stack gas exit velocities and temperatures) but at the merged stack locations. For example, Units C1 and C2 were assumed to be located at ES1, and Units C3, C4 and C5 were assumed to be located at ES4. The model calculates impacts independently for each stack; therefore, collocating the units within the model runs does not in any way enhance the predicted buoyancy of the plumes or grant additional dispersion credit.

4. Modeling Methodology and Results

All air quality modeling analyses conducted conform to 40 CFR Part 51, Appendix W - Guidelines on Air Quality Models. The modeling analysis generally conforms to the framework established in a protocol dated *Revised Protocol for Modeling Ambient Pollutant Concentrations from the Existing Stacks and from the Proposed Stack Merge Project at the Potomac River Power Plant (July 2007).*

Each pollutant modeled for is discussed in detail below.

4.1. Sulfur Dioxide (SO_2)

Eleven separate scenarios varying the units operating were developed to model PRGS. Within those eleven scenarios, an array of operating conditions (i.e., minimum load, mid-range load, maximum load and varying hours of operation) was developed for a total of 55 modeled cases.

The following 5-step process was used to evaluate compliance with the SO_2 NAAQS and to identify the associated complying emission rates:

1. The 55 merged stack cases were modeled to develop complying lbs SO_2/MMBTU emission rates for each case.

2. To reduce model run time, the following cases, which produced the most restrictive 3-hour and 24-hour complying rates, were selected for cumulative SO_2 emissions inventory modeling. This modeling step is important to determine the interaction of PRGS with any nearby facilities:

Ground Level Receptors	3-hour: Case 1c, 0.52 lbs/MMBTU 24-hour: Case 2c, 0.49 lbs/MMBTU
Marina Towers Receptors	3-hour: Case 1d, 0.39 lbs/MMBTU 24-hour: Case 9d, 0.37 lbs/MMBTU

   Due to the fact that modeling indicates the 24-hour complying emission rates are always more restrictive than annual emission rates for PRGS, modeling for the annual averaging period assumed 24-hour complying rates.

3. PRGS was modeled along with the SO_2 cumulative emissions inventory, at receptors within 50 kilometers where PRGS had a significant concentration to determine any potential NAAQS violations. The Significant Impact Levels (SILs) used correspond to the Class II Prevention of Significant Deterioration (PSD) SILs established by the EPA.

4. The most restrictive PRGS emission rates produced some modeled NAAQS violations where PRGS significantly contributed, therefore new complying PRGS emission rates were determined to eliminate predicted violations or reduce PRGS impacts to less than SIL. The following new complying rates were found:

Ground Level Receptors	3-hour: Case 1c, reduced by 12% to 0.46 lbs/MMBTU 24-hour: Case 2c, 0.49 lbs/MMBTU (no change, PRGS does not significantly contribute to any violations)
Marina Towers Receptors	3-hour: Case 1d, 0.39 lbs/MMBTU (no change, no violations) 24-hour: Case 9d, reduced by 5% to 0.35 lbs/MMBTU

5. Emission rates for the remainder of the 55 modeling cases were reduced by the percentages listed above.

Tables 1, 2 and 3 provide the estimated 3-hour and 24-hour SO_2 air quality impacts for several PRGS operating scenarios. The 24-hour results are presented for the two proposed permit limits (0.35 lbs/MMBTU and 0.30 lbs/MMBTU). When reviewing these results, it is important to understand that there are a few levels of conservatism built into the calculations:

1. All concentrations represent the highest-second highest impacts at any receptor in the modeling domain for any load condition, consistent with NAAQS compliance for short-term averaging periods.

2. The background air quality is the second highest value measured over the period 2004-2006 and is assumed to exist on every day of the 5-year modeling period.

3. Adding a 5% reduction for nearby source interaction (24-hour results) in addition to the background air quality likely “double counts” the impact of these sources.

4. The AERMOD dispersion model results using Equivalent Building Dimensions (EBD) derived from the wind tunnel study appear conservative with respect to SO_2 on-site monitoring data.

Therefore, in order for these concentrations to occur, all of these factors (i.e., worst-case load condition, meteorology, background air quality and interacting sources) would have to occur on both a spatial and temporal scale to produce these impacts.

Table 1: 3-Hour SO_2 Impacts
(NAAQS = 1300 µg/m^3)

Scenario	NAAQS Complying Rate (lbs/MMBTU)[1]	Permit Limit (lbs/MMBTU)	Percent Reduction from NAAQS Complying Rate (%)	Estimated PRGS Concentration (µg/m^3)	Background Air Quality (µg/m^3)	Total Concentration (µg/m^3)
2 cycle/ 3 base	0.39	0.39	0.00%	1124.60	175.4	1300.00
1 cycle/ 3 base	0.39		0.00%	1124.60		1300.00
3 base	0.61		36.07%	719.01		894.41
2 cycle/ 2 base	0.43		9.30%	1019.99		1195.39
1 cycle/ 2 base	0.72		45.83%	609.16		784.56
2 base	0.54		27.78%	812.21		987.61
2 cycle/ 1 base	0.80		51.25%	548.24		723.64
1 cycle/ 1 base	0.55		29.09%	797.44		972.84
1 base	0.47		17.02%	933.18		1108.58
2 cycle	0.96		59.38%	456.87		632.27
1 cycle	0.85		54.12%	515.99		691.39

[1] Conservatively assumes emission rate impact is equivalent to PRGS target concentration of 1124.6µg/m^3. All complying rates are calculated based on the most limiting concentration which always occurs at Marina Towers receptors.

Table 2: 24-Hour SO_2 Impacts
Complying Rate of 0.35 lbs/MMBTU
(NAAQS = 365 µg/m^3)

Scenario	NAAQS Complying Rate (lbs/MMBTU)[1]	Permit Limit (lbs/MMBTU)	Percent Reduction from NAAQS Complying Rate (%)	Estimated PRGS Concentration (µg/m^3)	Background Air Quality (µg/m^3)	Total Concentration (µg/m^3)
2 cycle/ 3 base	0.41	0.35	14.63%	251.40	55.0	306.40
1 cycle/ 3 base	0.36		2.78%	286.32		341.32
3 base	0.58		39.66%	177.72		232.72
2 cycle/ 2 base	0.44		20.45%	234.26		289.26
1 cycle/ 2 base	0.71		50.70%	145.18		200.18
2 base	0.47		25.53%	219.31		274.31
2 cycle/ 1 base	0.83		57.83%	124.19		179.19
1 cycle/ 1 base	0.53		33.96%	194.48		249.48
1 base	0.35		0.00%	294.50		349.50
2 cycle	1.11		68.47%	92.86		147.86
1 cycle	0.67		47.76%	153.84		208.84

[1] Conservatively assumes emission rate impact is equivalent to PRGS target concentration of 294.50µg/m^3, which is a reduction of 5% from the original target concentration of 310µg/m^3 to account for nearby interacting sources. All complying rates are calculated based on the most limiting concentration which always occurs at Marina Towers receptors.

Table 3: 24-Hour SO_2 Impacts
Complying Rate of 0.30 lbs/MMBTU
(NAAQS = 365 µg/m^3)

Scenario	NAAQS Complying Rate (lbs/MMBTU)[1]	Permit Limit (lbs/MMBTU)[2]	Percent Reduction from NAAQS Complying Rate (%)	Estimated PRGS Concentration (µg/m^3)	Background Air Quality (µg/m^3)	Total Concentration (µg/m^3)
2 cycle/ 3 base	0.41	0.30	26.83%	215.49	55.0	270.49
1 cycle/ 3 base	0.36		16.67%	245.42		300.42
3 base	0.58		48.28%	152.33		207.33
2 cycle/ 2 base	0.44		31.82%	200.80		255.80
1 cycle/ 2 base	0.71		57.75%	124.44		179.44
2 base	0.47		36.17%	187.98		242.98
2 cycle/ 1 base	0.83		63.86%	106.45		161.45
1 cycle/ 1 base	0.53		43.40%	166.70		221.70
1 base	0.35		14.29%	252.43		307.43
2 cycle	1.11		72.97%	79.59		134.59
1 cycle	0.67		55.22%	131.87		186.87

[1] Conservatively assumes emission rate impact is equivalent to PRGS target concentration of 294.50µg/m^3, which is a reduction of 5% from the original target concentration of 310µg/m^3 to account for nearby interacting sources. All complying rates are calculated based on the most limiting concentration which always occurs at Marina Towers receptors.

[2] Limit effective January 1, 2009.

Table 4 provides the estimated annual SO_2 air quality impacts for <u>any</u> PRGS operating scenario. The annual results are presented for two complying rates (0.35 lbs/MMBTU and 0.30 lbs/MMBTU). The results assume the 24-hour complying rates in Tables 2 and 3 over 365 days.

Table 4: Annual SO_2 Impacts
(NAAQS = 80 µg/m^3)

Scenario	24-Hour Permit Limit (lbs/MMBTU)	Maximum Tons Per Year Modeled[1]	Estimated PRGS Concentration (µg/m^3)	Background Air Quality (µg/m^3)	Total Concentration (µg/m^3)
ALL	0.35	8,116	47.98	16.0	63.98
	0.30	6,956	41.12		57.12

[1] Modeling conducted using a total maximum heat input of 5,294 MMBTU/hr multiplied my 8760 hours per year or 46,375,440 MMBTU/yr.

As previously mentioned, all short-term limits in effect protect the annual NAAQS with a significant margin of safety. The "potential-to-emit" or PTE limit from the June 1, 2007 permit remains in effect in the proposed merged stack permit (3,813 tons per year).

4.2. Particulate Matter (PM_{10})

The following three-step process was used to evaluate compliance with the PM_{10} NAAQS and to identify the associated complying emission rates:

1. To reduce the total number of PM_{10} modeling runs (and expedite model run time), PRGS was modeled assuming the most restrictive 24-hour SO_2 modeling case as well as Case 1 (where all 5 units operate to maximize fugitive emissions). The following cases were modeled:

Ground Level Receptors	Case 2c, stacks at 0.055 lb/MMBtu, fugitive emissions at 4/5 total (only 4 units operate for this case)
	Case 1d, stacks at 0.055 lb/MMBtu, total fugitive emissions
Marina Towers Receptors	Case 9d, stacks at 0.055 lb/MMBtu, fugitive emissions at 1/5 total (only 1 unit operates for this case)
	Case 1d, stacks at 0.055 lb/MMBtu, total fugitive emissions

2. PRGS was modeled with the PM_{10} "mini" cumulative inventory at receptors within the Significant Impact Area (SIA), and with increased receptor spacing at the ground level to determine the maximum impact location. The "mini" inventory was defined as all background sources with emissions greater than 1 gram per second. The number of receptors and cumulative inventory sources were reduced in this step to expedite model run time.

3. PRGS was modeled with the full PM_{10} cumulative inventory at receptors around the maximum impact locations found above to ensure maximum impacts were resolved to 100 meters. NAAQS compliance was demonstrated.

As previously stated, it was originally contemplated by DEQ to recommend to the SAPCB to grant dispersion credit for PM_{10}; however, due to limited stack test data, it is now recommended that a decision by the SAPCB on dispersion credit be deferred until additional stack test data are available for review.

The modeling results presented in Table 5 apply no dispersion credit for a range of PM_{10} emission rates. Results are presented separately for ground level receptors (includes Alexandria House) and Marina Towers. The results indicate the following:

1. No dispersion credit is needed for to demonstrate compliance with the PM_{10} NAAQS, with all rates between 0.020 and 0.055 showing compliance with a margin of safety.

2. Design value concentrations are generally the result of predicted fugitive emissions impacts at ground level. Therefore, adjusting the PM_{10} stack emission rate reduces concentrations on Marina Towers but does little to affect ground level concentrations in the vicinity of PRGS.

Table 5: 24-Hour PM_{10} Impacts
(NAAQS = 150 μg/m³)

Receptor Locations	Emission Rate (lbs/MMBTU)[2]	Estimated PRGS Concentration (μg/m³)	Background Air Quality (μg/m³)	Total Concentration (μg/m³)
Marina Towers	0.020	31.62	40.0	71.62
	0.030	46.53		86.53
	0.040	61.46		101.46
	0.055	83.88		123.88
Ground Level[1]	0.020	81.84	40.0	121.84
	0.030	82.19		122.19
	0.040	82.54		122.54
	0.055	82.79		122.79

1 Includes Alexandria House receptors.
2 Proposed permit limit is 0.03 lbs/MMBTU based on DEQ review of available stack test data.

4.3. Nitrogen Dioxide (NO_2)

The following process was used to evaluate compliance with the NO_2 NAAQS and to identify the associated complying emission rates:

1. No dispersion credit is granted for NO_2; therefore, all emission units were modeled using existing stack parameters as described in Section 3.2. The cases below assume that all five units are operating for the full range of load conditions.

Ground Level Receptors &	Merged Case 1c, 0.32 lbs/MMBTU
Marina Towers Receptors	Merged Case 1d, 0.32 lbs/MMBTU
	Merged Case 1e, 0.32 lbs/MMBTU

2. To reduce model run time, the worst of the above merged stack cases was chosen for cumulative NO_2 modeling:

Ground Level Receptors	Merged Case 1d, 0.32 lbs/MMBTU
Marina Towers Receptors	Merged Case 1e, 0.32 lbs/MMBTU

   PRGS was modeled along with the NO_2 cumulative emissions inventory at receptors within 50 kilometers where PRGS had a significant concentration. NAAQS compliance was demonstrated.

   Since modeling was conducted using an emission rate of 0.32 lbs/MMBTU for 8760 hours of operation, or 7,420 tons per year, the results in Table 6 were scaled to reflect the permitted limit of 3,700 tons per year.

Table 6: Annual NO_2 Impacts
(NAAQS = 100 $\mu g/m^3$)

Receptor Locations	Emission Rate (lbs/MMBTU)	Permitted Tons Per Year	Estimated PRGS Concentration ($\mu g/m^3$)	Nearby Source Contribution ($\mu g/m^3$)	Background Air Quality ($\mu g/m^3$)	Total Concentration ($\mu g/m^3$)
Marina Towers	0.32	3,700	24.4	5.0	45.1	74.5
Ground Level			15.5	5.0		65.1

4.4. Carbon Monoxide (CO)

Due to concerns raised about CO emission factors, an evaluation of available CO test data was conducted. The table below shows all the CO data recorded during particulate matter tests conducted in November and December 2006. Tests were conducted on Unit C2 and Unit C3. The highest test-average CO for each unit is highlighted in Table 7 (539 ppmv for Unit C2 and 1,040 ppmv for Unit C3).

Table 7: CO Data from PRGS Particulate Matter Testing (December 2006)

	Unit C2		Unit C3	
Test #	1-Min Max ppm	Test Avg ppm	1-Min Max ppm	Test Avg ppm
1	212	9	1490	1019
2	20	-4	681	359
3	39	0	690	481
4	614	476	615	429
5	306	100	649	485
6	291	111	1484	258
7	237	61	1490	1040
8	109	53	681	366
9	212	10	689	472
10	39	-2	615	435
11	614	427	649	484
12	306	99	1484	262
13	291	107	1324	946
14	66	54	681	401
15	109	53	689	527
16	212	21.9	615	422
17	39	-1	649	483
18	614	539	320	240
19	306	104		
20	291	104		
21	60	55		
22	109	55		

The maximum test-average CO value recorded for Unit C2 (539 ppmv) is lower than the value used in the original 2005 "downwash study" provided by Mirant. As a result, it was decided to continue to use the 2005 values for modeling Units C1 and C2. The 2006 average CO values recorded for Unit C3 are higher than the values used in the August 2005 study; therefore, the highest 2006 CO average value (1,040 ppmv) was selected for modeling Units C3, C4 and C5. It is also important to note that it is not appropriate to use the single-minute data points in modeling NAAQS standards that are at least one-hour averages or longer. Furthermore, the reliability of these CO CEM data is questionable because these data are not certified, with several negative numbers during the test. However, to be conservative, ensure NAAQS protection, and address City of Alexandria comments on CO emission factors modeling was conducted using these values.

Table 8 presents a comparison of the modeled emission rates versus the permitted emission rates. As can be seen from the table, the permitted rate is much more restrictive than the rate modeled. The permitted rate of 0.03 lbs/MMBTU represents a site-specific emission factor which was developed by the DEQ Northern Regional Office. Condition 30 of the draft permit states that prior to the installation, certification, and operation of the CO CEM, the permittee shall calculate total emissions of CO in tons per year using the DEQ-approved site specific emission factor. Following the installation, certification, and operation of the CO CEM, the permittee shall calculate emissions of CO in tons per year one month following the start of certified operation and for the first twelve months will be the sum for each of the completed months. After the initial twelve months of operation, the permittee shall calculate annual emissions by adding the most recent monthly emissions to the previous eleven consecutive months.

Table 8: CO Emissions Rate Comparison

Emission Unit	Modeled Emission Rate (ppmv)	Modeled Emission Rate (lbs/hr)	Permitted Emission Rate (lbs/MMBTU)	Permitted Emission Rate (lbs/hour)
C1	680.9	714.93	0.03	31.59
C2	688.6	732.99		30.87
C3	1,040	1033.67		30.54
C4	1,040	994.79		32.61
C5	1,040	968.75		33.21

As with NO_2, no dispersion credit was granted; therefore, PRGS was modeled (Cases 1c-1e) with existing stack parameters and merged stack locations as described in Section 3.2. The results of the CO modeling are summarized in Table 9.

Table 9: 1-Hour and 8-Hour CO Impacts

Receptor Locations	Averaging Time	Estimated PRGS Concentration (µg/m^3)	Background Air Quality (µg/m^3)	Total Concentration (µg/m^3)	NAAQS (µg/m^3)
Marina Towers	1-Hour	7,358	3,335	10,693	40,000
Ground Level		9,553		12,888	
Marina Towers	8-Hour	4,918	2,634	7,552	10,000
Ground Level		2,600		5,234	

4.5. Toxics (Mercury (Hg), Hydrochloric Acid (HCl) and Hydrogen Fluoride (HF))

Hg, HF and HCl were modeled using maximum 1-hour average emissions. Hg was also modeled using annual average emissions. Impacts were compared to Significant Ambient Air Concentrations (SAAC) in 9 VAC 5 Chapter 60 of the State Regulations.

Maximum modeled 1-hour emissions for HCl and HF were calculated using the maximum heat input and lbs/MMBTU emissions factors developed from stack testing conducted in December 2006. The emission rates used from the stack test data are as follows:

- HCl = 0.00112 lbs/MMBTU (dry sorbent injection on) – 0.09 lbs/MMBTU (dry sorbent injection off)
- HF = 0.000776 lbs/MMBTU

Modeling indicates that compliance with the SAAC is achieved with the following emission rates:

- HCl = 0.021 lbs/MMBTU
- HF = 0.0076 lbs/MMBTU

It is understood that dry sorbent injection preferentially controls HCl over SO_2. In order to achieve the aforementioned toxic pollutant complying emission rates, HCl would have to be controlled by at least 77% ((0.09 lbs/MMBTU – 0.021 lbs/MMBTU / 0.09 lbs/MMBTU) x 100). Testing performed at PRGS on Unit C3 December 14, 2006 indicated that dry sorbent injection controlled HCl by 98.7%. During this testing, SO_2 emissions were at 0.29 lbs/MMBTU which corresponds to an approximate SO_2 control of 75%. Under all anticipated operating scenarios there is significant excess dry sorbent, on the order of a factor of 10, as would be required to completely react with HCl. Therefore, at least 95 - 99% HCl control is anticipated under all operating scenarios. For example, even assuming 50% SO_2 control, 95 – 99% HCl control is anticipated.

Table 10 presents the results of the toxic pollutant modeling analyses.

Table 10: 1-Hour and Annual Toxic Pollutant Impacts

Receptor Locations	Toxic Pollutant	Modeled Emission Rate (lbs/MMBTU)	Averaging Time	Estimated PRGS Concentration (µg/m^3)	SAAC (µg/m^3)
Marina Towers	HCl	0.021 [1]	1-Hour	86.1	187.5
Ground Level				119.3	
Marina Towers	HF	0.0076 [1]	1-Hour	31.2	65
Ground Level				43.2	
Marina Towers	Hg	7.70E-06	1-Hour	0.0672	0.5
Ground Level				0.0958	
Marina Towers		4.31E-06 [2]	Annual	0.00087	0.02
Ground Level				0.00056	

1 The proposed permit limits for HCl (0.0072 lbs/MMBTU) and HF (0.0026) and more stringent (i.e., lower) than the modeled emission rates.

2 The Hg emission rate is equivalent to 200 lbs/yr. The Clean Air Mercury Rule allocation is approximately 72 lbs/yr.

4.6. Particulate Matter ($PM_{2.5}$)

Current DEQ policy for the implementation of $PM_{2.5}$ for New Source Review (NSR) is defined in Air Guidance Memo No. APG-151 (Interim Implementation of New Source Review for $PM_{2.5}$, October 6, 2006).

EPA has issued guidance on the interim implementation of New Source Review for $PM_{2.5}$ in the following documents:

Interim Implementation of New Source Review Requirements for $PM_{2.5}$
John Seitz – October 23, 1997

Implementation of New Source Review Requirements in $PM_{2.5}$ Non-attainment Areas
Steve Page – April 5, 2005

The current policy dictates that DEQ will use PM_{10} as a surrogate for $PM_{2.5}$, as specified in the EPA guidance documents, until such time as:

- DEQ establishes a more appropriate implementation methodology; or
- EPA promulgates revised implementation guidance or policy; or
- EPA promulgates final regulations

Using $PM_{2.5}$ as a surrogate means to compare the PM_{10} modeling results to the PM_{10} NAAQS. Compliance with the PM_{10} NAAQS is used as a surrogate for compliance with the new $PM_{10\text{-}2.5}$ NAAQS for a temporary period. This is one of the options that EPA presented in its 2006 EPA Advanced Notice of Proposed Rulemaking (ANPR) on the $PM_{2.5}$ rule. Specifically, EPA policy allows PM_{10} to be used as a surrogate, based on:

- Review of policy statements
- Exchange with EPA representatives
- Other permit examples with other state agencies, most notably EPA Region III

Use of PM_{10} as a surrogate is also consistent with current lack of available regulatory tools for addressing $PM_{2.5}$ in NSR applications. Additionally, unresolved implementation issues remain regarding how to properly use $PM_{2.5}$ background data and emissions inventory data along with how to properly apply particle size distributions and how to speciate various types of emissions.

DEQ's consistent position is that use of the surrogate approach avoids setting a precedent that may be problematic for the following reasons:

- It would be extremely difficult for <u>any</u> source to show compliance using the modeling techniques applied for other criteria pollutants. There is clearly a lack of appropriate modeling methodologies for $PM_{2.5}$ from individual sources.

- EPA guidance is anticipated on $PM_{2.5}$ implementation later this year - $PM_{2.5}$ modeling performed now may not be consistent with the guidance.

EPA has indicated that final implementation guidance may become available in early 2008. DEQ will evaluate the options presented under the EPA guidance to establish an appropriate and technically defensible approach to assessing compliance with the $PM_{2.5}$ standard for PRGS.

DEQ is also committed to working with the regulated community and various stakeholders in the development of appropriate $PM_{2.5}$ modeling methodologies. Specifically, DEQ will post an advertisement on the Regulatory Town Hall on January 2, 2008, soliciting participation in a Fine Particulate Matter ($PM_{2.5}$) Implementation Workgroup. The workgroup will be responsible for developing a draft policy to evaluate both new and existing sources that have the potential to emit $PM_{2.5}$ in quantities that could have a potential for significant adverse health and/or environmental impacts. DEQ is seeking membership from environmental and health organizations, academia, the legal profession, and industry or trade associations that have a background in air quality modeling, policies or programs to serve on this workgroup. Submissions will be due by close of business on February 4, 2008.

Finally, Condition 37 of the draft permit states that PRGS shall conduct an ambient air quality analysis for the emissions of $PM_{2.5}$ from the facility based on a schedule and protocol to be established by DEQ after EPA promulgates final rules for $PM_{2.5}$ analysis, or EPA promulgates revised implementation guidance or policy for $PM_{2.5}$ analysis, or DEQ establishes a more appropriate implementation methodology for $PM_{2.5}$.

5. Conclusions

Based on DEQ's review of the modeling analyses, the proposed permit limits would not cause or significantly contribute to a predicted violation of any applicable NAAQS or SAAC.